

High-Q Tunable Filters and High Efficiency Charge Pumps, Phase I

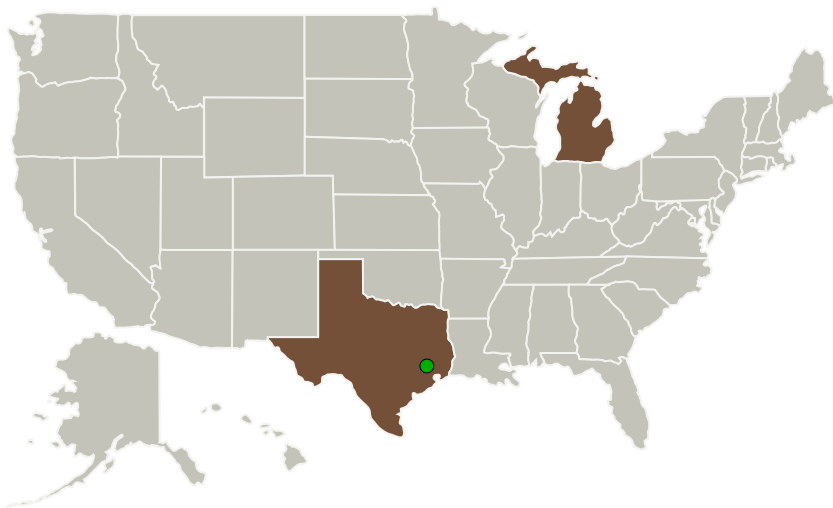
Completed Technology Project (2011 - 2011)




Project Introduction

The supply voltages of modern baseband digital integrated circuits are well below the required actuation voltages for the MEMS tunable filters. Therefore, a charge pump is used to achieve the required high actuation voltage for the MEMS devices. Current state-of-the-art charge pump designs produce output voltage ripples as high as 1 V, which has adverse effects on filter performance, and this is a critical technology gap. The proposed technology will close this gap by delivering two Integrated Circuits (ICs), a high-efficiency charge pump with low-ripple output and a filter design that is immune to bias noise (caused by the ripple).

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Virtual EM Inc.	Lead Organization	Industry	Ann Arbor, Michigan
 Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations

Michigan	Texas
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Project Transitions

 **February 2011:** Project Start

 **September 2011:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138529>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Virtual EM Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

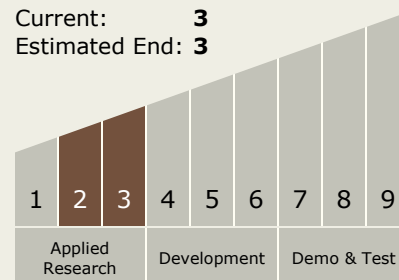
Carlos Torrez

Principal Investigator:

Tayfun Ozdemir

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



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Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.2 Radio Frequency
 - └ TX05.2.2 Power-Efficiency

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System